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## THE RURAL WATER SUPPLY AN INTEGRAL PART OF THE MUNICIPAL SUPPLY<sup>1</sup>

BY DR. E. G. BIRGE<sup>2</sup>

That Farmer Jones' well, located 5 miles northwest of Rock Rapids, may at any time become an integral part of the municipal supply of Keokuk sounds, on the face of it, a foolish statement, yet the author hopes in the course of these few remarks to prove that such may be the case, and that the water works official should be as vitally interested in that well as in his own municipal supply. Not only is it to his interest to see and to know that Farmer Jones has a pure water supply, but it is to his interest to see that it is kept pure.

To follow out our original premise more fully, let us suppose that one of the citizens of Keokuk drifts up into the northwestern part of the state and lives for a while on the farm in question, returning to Keokuk in apparent good health. Let us furthermore suppose that there has been a typhoid epidemic, a small one, to be sure, merely one of those local flareups that don't get into the paper, that has been traced to the use of a contaminated well existing on our farm. In due time the citizen in question develops a case of typhoid fever. Potentially he is dangerous to the rest of the community, and it is up to the water works superintendent to see that no more cases of typhoid fever develop in Keokuk through the medium of the water. To all intents and purposes that well, situated miles away, has become an integral part of the Keokuk supply and the water in Keokuk must be treated as though it was contaminated.

While that is a concrete case, merely a supposition in this instance, yet the underlying idea is the one which governs the treatment of water in the country at the present time. Were it not for the fact that water supplies, city as well as rural, are in constant danger of being contaminated by the excreta of human beings, the necessity of chemical treatment, of sand filtration and the constant expense

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of so safe-guarding the watershed as to reduce the danger to a minimum would be largely reduced. Do not get the idea that it would be absolutely done away with in any community. If it could, it would simply mean that the human beings residing in that community would be perfect, a thing unheard of, yet all will agree that if all water supplies could be kept from being contaminated the problems of the water works manager would be solved to a large extent.

Another reason why the water supply must be more carefully watched when there is a case of typhoid in the town, is the fact that the public throws suspicion first on the water supply and should an epidemic arise from that first case, the public always jumps to the conclusion that the water is at fault and it may lead to serious difficulties for the water company. In some instances, even when the water company was not at fault and the water was not contaminated, although the analysis of the water showed the possibility of its being so contaminated, the cities have revoked the franchise of the water company. It is for this reason as much as any other that the water company should be interested in the rural supply, not only of the surrounding country, but of the entire state.

Can that condition be brought about? The first answer to that question is usually, "no." Possibly that is the correct answer; personally the author is optimistic enough to think otherwise. Certainly it cannot be brought about in a short time, nor without a great deal of effort on the part of those most vitally interested, nor can it to a large extent ever be brought to a point of perfection, but that the conditions can to a large extent be improved, and should be improved, goes without saying. What forces are there at our command to tackle this problem and to keep the matter agitated to a point where the public will think about it and see that it is done, for without the public back of the movement it is doomed to failure at the start?

The State Board of Health is the first force we have to deal with, and no board of health worthy the name neglects this important thing for a minute, yet it is a deplorable fact that in most parts of the country the improvement goes on with surprising slowness due no doubt to the multiple activities of the State Board of Health and to the fact that the public looks to them to decrease disease, and this matter of improving water supplies, either municipal or rural, is merely a co-incident step in the reduction of disease. As such it receives its greatest attention at times of epidemics, and usually

only in proportion as the danger lies to the community immediately interested. Usually, too, there is little follow-up work done, and the rural supply, once put into shape, in a short time relapses into its former condition. This is not always the fault of the State Boards of Health; if it were, it would be an awful indictment against men who are giving the best they have towards the betterment of the communities in which they live. Usually it is largely due to apathy on the part of the public and a lack of definite coöperation on the part of other forces working towards the same end. This lack of coöperation is enormous in our public life; various boards and societies, instead of coöperating, overlap on their work, each jealous and afraid that the other fellow is going to spring something new and get the lead.

Can a society such as the American Water Works Association do anything of value along this line? Most assuredly it can and it does; not only that but its members are those who, from a monetary standpoint, are most vitally interested. The Association has always stood for the best in water works practice and it is largely to its efforts that we have the present laws governing municipal water supplies. There is no question but that it would do more work with the rural supplies if it was definitely realized that they may become at any time an integral part of the municipal supply, even if it is only in an indirect manner.

The thing which we would all like to see, not only as professional men but as citizens, is the betterment of the community. That good water tends towards that betterment is unquestioned. In order to keep that water good the general sanitation of the community must be improved. We are all familiar with the Mills-Reincke phenomenon, in which the death rate due to all causes shows a reduction greater than can be accounted for by the drop in deaths from typhoid fever alone, when reduced by the use of filtered water. If that drop in the death rate holds for cities with proper municipal water supplies, think of the reduction in deaths to a state which could say that the biggest proportion of its rural supplies was above suspicion.

The task is a great one; just what the plans of such a campaign would have to be is a question. The present laws concerning the pollution of water in this, as in many other states, relate to the water supplies of cities and incorporated towns. So far as they go they are adequate, but they do not go far enough. The time has passed when any city can clean up its own yard and say, "sufficient." In

the past these conditions undoubtedly held good, in which the rural district was isolated to a greater or less extent, and the pollution of a rural water supply affected only those persons who used it. However, with the coming of the automobile and the advent of good roads, no part of a state, or of the surrounding states, can in any sense of the word be termed isolated. There is altogether too much travelling back and forth and it is too easy for the persons living in remote districts to come into the town, to say that any district, no matter how remote, is isolated from the city. It is those outlying districts in which the water supply is not so carefully watched that are dangerous to the municipalities. On account of the present laws, the strictly rural supplies, and by that is meant the well that supplies the farmer's family and possibly a neighbor or two, are not brought to the attention of the health authorities, either local or state, until disease appears in the neighborhood and suspicion points toward the supply. For the reasons set forth above, it is as necessary to safeguard the strictly rural water supply as it is to safeguard the water supply of the municipality and state. Another benefit which is bound to come from the constant supervision of the individual country water supply is the fact that the surrounding conditions will necessarily be put into better sanitary condition and will be kept in better sanitary condition. Not only will that benefit the water supply itself, but it will benefit the entire catchment area in which that supply is situated. To put it briefly, it will make the sanitary supervision of the municipal water supply more efficient than is possible at the present time.

Such a plan would probably necessitate the establishment of either a district or county health officer, of necessity a full-time man. It might, and probably would, necessitate the establishment of a laboratory centrally located in the district or county. While that would at first seem to put an undue burden of expense on the community, as a matter of fact such a laboratory, designed for examination of water, milk and chemical material, can be made to be nearly, if not quite, self-supporting through private investigations for physicians, investigations not along strictly public health lines. Coöperation in meeting the expense of public health service has worked in other places and it is unreasonable to suppose that it would not work in this State. That the state, county, and municipality could not coöperate in obtaining full-time men of ability is unthinkable. That they might not, is at present probable; but if the demand was great enough, it would in all probability be done.

It is only through such a demand that any improvement is possible. Undoubtedly when it is realized that when proper sanitary conditions obtain in rural districts many of the health problems in urban communities will be materially lessened, that demand will be made. Certainly improved rural sanitation will materially lessen the problems of the city water works manager, both technically and financially, and it would seem reasonable to suppose that the water works engineer should be vitally interested in seeing some such plan established.

Along this same line it appears that the time is fast approaching for other states in the Union to follow in the steps of the New Jersey State Board of Health in the licensing of the water works operators and operators of sewage disposal plants. It is unnecessary to give at this time the exact wording of that law. New Jersey grants four grades of licenses, upon examination. The highest grade is that of the superintendent. The superintendent must be familiar with the operation and chemical treatment of water as well as with the chemical and bacteriological analysis of water. The other grades are for operatives and depend entirely upon the amount of knowledge which the man shows in his line of work. Such a law assures the highest efficiency in the operation of these plants and to a large extent assures the operation of the plants by a proved expert. That such efficiency is desirable, will no doubt be unquestioned, and that it will work for the general betterment of sanitary conditions, as related to water supplies, is also obvious.

The author has tried in this short paper to bring out the fact that the rural water supply is an integral part of the municipal water supply and that the citizens of the community as well as those officials to whom they look for better health conditions should be as vitally interested in the remote well as they are in a well next door. There has been nothing new brought out in this paper, although the angle from which this matter has been taken up may be new to some. Even to those to whom it is an old story, the author would say that any campaign in any community looking toward better sanitary conditions of any kind must take into account the remote country district, if we can still call it remote. Under the present living conditions, all communities are so closely bound together that a campaign for better health conditions in one corner of the state loses a large share of its effect unless that campaign can be taken up throughout the entire state at the same time.